

Chapter 1 Purpose and Need

1.1 Introduction

The California Department of Transportation (the Department), the Metropolitan Transit Development Board (MTDB), and the San Diego Association of Governments (SANDAG) have worked together on various solutions needed to address existing and anticipated congestion issues on Interstate 15 (I-15). The proposed project is located 2.4 kilometers (1.5 miles) south of State Route 163 (SR-163) to 0.5 kilometer (0.31 mile) north of State Route 78 (SR-78), a distance 34.0 kilometers (21.1 miles). The project location and vicinity map, Figure 1-1, shows the limits of the proposed project.

The resolve of agencies, communities, legislators, and business leaders is to work cooperatively to help expedite improvements to the I-15 freeway.

The Managed Lanes Project proposes outside widening of the existing freeway lanes on one or both sides to accommodate four “managed lanes” within the median. . The lanes are considered managed since they allow the flexibility to alter lane configurations through the use of a moveable barrier, thus improving freeway capacity for HOV and transit users in the peak direction. These managed lanes would be available to HOV, buses, and possibly single occupancy vehicles (SOV).

The proposed project is needed to expand I-15 to better handle the current and future traffic needs between San Diego and Escondido, in San Diego County.

Within this portion of I-15, motorists are subjected to lengthy freeway queues which on average add from 30 to 45 minutes to their daily roundtrip commute. The delay is in part due to the lack of existing parallel routes to the I-15 freeway. Interstate 5 (I-5) which parallels I-15 to the west is not a feasible alternate route to I-15 due to its distance from I-15. The distance between I-5 and I-15 as it extends to the north and ranges from 0 kilometers (0miles) south of Interstate 8 to 45 kilometers (28 miles) at the Orange/San Diego County line. The average distance between these freeways within the project corridor is 16 kilometers (10 miles)

The *I-15 Managed Lanes Project* is included in SANDAG’s financially constrained 2020 Regional Transportation Plan, pages A-7,A-8, A-9, A-11, A76, A77, A82, A84, A85 and A86.

The project is in SANDAG's 2020 Regional Transportation Plan (RTP) (page 70, 75-78, 82, 113, A-7 through A-9, A-11, A-12) which was fully-funded and found to be conforming by FHWA and FTA on April 13, 2000. The project is also in SANDAG's 2000 Regional Transportation Improvement Program (RTIP) (page 5, 24, 57, and 99) which was found to be conforming by FHWA/FTA on October 6, 2000. The proposed project is also included in SANDAG's adopted financially constrained 2002 Regional Transportation Improvement Program, pages 5, 14, 24, 27, 28, 113, 114, and 124. Federal action on the 2002 RTIP is expected in early October 2002. Project design concept and scope are also consistent with the project description in the above RTP and FTIP.

The I-15 Managed Lanes Project does not interfere with the timely implementation of Transportation Control Measures (TCMs) of the State Implementation Plan (SIP).

The purpose of the project is consistent with the goals and policies set forth in the 2020 RTP. The purpose of the proposed project is to:

- Reduce travel time.
- Provide enhanced transit in the corridor by accommodating a High-Speed Bus Rapid Transit System. This allows people living or working in and adjacent to the corridor an additional travel choice, which is one of SANDAG's smart growth principles. Smart growth is defined by SANDAG as, "...a compact, efficient, and environmentally sensitive pattern of development that provides people with additional travel, housing, and employment choices by focusing future growth away from rural areas and closer to existing and planned job centers and public facilities." One smart growth principle includes, "designing transit systems to serve the highest residential and employment densities and to connect key activity centers..."
- Assist in Meeting the goals and commitments of the Department's System Management Plan and SANDAG's 2020 RTP.

1.2 Historical Background

I-15 was added to the State highway system in 1931 as State Route 395. It was added to the California Freeway and Expressway System in 1959 and the name was changed to Interstate 15. The portion extending from Interstate 8 to the Riverside County line was added to the interstate system in 1969.

The Lake Hodges Bridge was originally constructed as a four lane structure in 1969. The structure was widened to eight lanes in 1981. In 1985, improvements were completed at Via Rancho Parkway to manage traffic generated by construction at North County Fair shopping center.

In 1995, a detailed corridor study began to look at transit, freeway, and regional arterial improvements that might be required in the I-15 corridor. In 1998, the recommendation from this study included freeway improvements to I-15 and a High-Speed Bus Rapid Transit System, in the mid-term. Rail transit would be considered a long term solution. The study did not recommend any new corridors for transit or highways (arterials). Therefore, this project proposes to widen and modify the existing freeway and would be located primarily within the existing freeway right of way. The proposed project avoids many of the environmental impacts associated with new alignments. If the proposed project does not go forward, the pressure to construct a new freeway on a new alignment would likely increase as the traffic demand grows.

In February 1998, an I-15 Transportation Forum was held, sponsored by Jan Goldsmith, State Assembly. After this meeting, many community groups took action to endorse the Managed Lane Project.

In 1998, SANDAG received FHWA approval as well as federal funds to develop and implement a value pricing demonstration project on the existing I-15 HOV reversible lanes. The Department worked in cooperation with SANDAG and the Federal Highways Administration (FHWA) on this program. The program sells extra capacity to single occupancy vehicles (SOV) in order to maintain a level of service (LOS) of D or better. Currently, 20 to 25 percent of the traffic on the reversible lanes are SOVs.

In 2001 the governor signed State Assembly Bill 313 that changed the Value Pricing Program from a demonstration program to a permanent program. This bill also removed the sunset provision for the program. Coordination with FHWA would be required even if the Value Pricing Program is not implemented as a separate project.

1.3 Existing Facility

Interstate 15 extends from Interstate 5 in southern San Diego County to the Canadian Border.

Within the study area, I-15 is an eight to ten-lane freeway with auxiliary/added lanes at various locations. The main lanes are 3.6 meters (12 feet) wide and composed of Portland Cement Concrete (PCC) pavement. The shoulders are a minimum of 3.0 meters (10 feet) and composed of an Asphalt Concrete (AC) structural section.

The median varies but can be described in three segments (each approximately 11 kilometers [7 miles]). 1) From SR-163 to SR-56, the median includes the existing Reversible High Occupancy Vehicle (HOV) lane facility. This facility is comprised of two 3.6 meter PCC lanes used by vehicles and a 3.0 meter AC shoulder on each side. A concrete barrier separates the main lane inside shoulder from the Reversible HOV lane shoulder on each side. The minimum median width is about 21.3 meters. 2) From SR-56 to Duenda Road Overcrossing, the median is mostly unpaved. The northbound and southbound roadways often have independent profiles thereby creating a median slope. The minimum median width is 21.3 meters (70 feet). 3) From Duenda Road Overcrossing to SR-78, the median width is about 14 meters (46 feet). Oleanders are planted in the median north of Del Lago Boulevard.

The barrier separated Reversible High Occupancy Vehicle (HOV) lane facility was constructed in the median of the freeway between SR-163 and SR-56 and was first opened for the afternoon commute northbound (NB) on the afternoon of October 20, 1988. These Reversible Lanes now carry about 16,000 ADT. The approximate hours of operation for these express lanes are 5:45 a.m. to 11:00 a.m. in the southbound direction and 12:00 p.m. to 7:00 p.m. in the northbound direction.

Ramp meters have been installed on all on-ramps in the study area, with the exception of the NB on ramp from Miramar Way.

1.4 Traffic Data

Demand for this vital north/south transportation corridor would grow as the economy expands and as the population increases. From 1999 to 2020, the region's population is projected to increase by 33 percent, growing by almost one million people. Over the same period, employment is projected to increase by 50 percent. Travel is expected to grow at a higher rate than either population or employment over this period.

The recent population increase and projected population increase and the resultant demand for additional housing, employment, and public facilities, has and would continue to put a tremendous burden on the existing transportation system. Over the last decade, average daily traffic (ADT) on the existing facility has increased an average of 58 percent from 185,000 to 292,000 in 1999. Year 2020 (No Build) traffic projections show 380,000 ADT, an increase of approximately 30 percent over 1999 traffic volumes due to planned future development. Currently there is a split with congestion only occurring in the peak direction. By 2020 traffic without the project would increase to the point that there is heavy congestion in both the peak and reverse peak directions.

A 2030 Regional Transportation Forecast model is being developed by SANDAG, however, it is currently not available for planning purposes. For this reason, the traffic analysis for the proposed project utilizes the existing 2020 Regional Transportation Forecast model. This model is still the approved traffic forecast for the region. Figures 1-2 through 1-4 show existing traffic, 2020 year no build traffic, and the 2020 traffic with the proposed project. Although the 2030 Regional Transportation Forecast model will probably show slightly higher volumes, the Department would not alter the scope of the proposed project because the Managed Lanes would still be effective since they are separated from the main lanes. The Managed Lane project in year 2020, shows congestion on the main lanes, however the four Managed Lanes would be managed to provide a LOS between A and D, thus moving a high percent of the person-trips in the corridor at free-flow conditions. Figure 1-5: 2020 Forecast (Smart Growth) PM Peak managed Lanes Alternative, shows where peak congestion would occur.

The contrast can be seen in Figures 1-2A through 1-4B by noting how the No Build northbound traffic at Carroll Canyon would be 164,000 vehicles per day (156,000 main lanes, 8,000 HOV) with almost 16,000 trips in the PM peak hour (13,000 main lanes, 2600 HOV lanes). This would all occur on the six main lanes and two existing HOV lanes. The Managed Lanes Project would serve 183,000 northbound trips per day (146,000 main lanes, 37,000 managed lanes) with almost 13,000 trips during the PM peak hour on the main lanes and 4,000 trips on the managed lanes. The project serves approximately 27,000 more trips per day (183,000 minus 156,000).

In the PM peak hour the northbound main lanes would carry approximately 13,000 vehicles for both alternatives; however, the No Build traffic would be travelling at approximately 16-24 kilometer per hour (10-15 miles per hour) while the managed lanes traffic would experience free flow speeds. For the PM peak hour in the northbound direction, the managed lanes are serving 1,400 more vehicles (4,000 minus 2,600) and over 3,000 additional people-trips.

With the current Level of Service (LOS) at D (40 mph [64 kph]) or worse during the peak periods travel time, it takes approximately 50 – 60 minutes to drive the entire 32 kilometer (20 mile) corridor. Delays would increase to over 80 minutes for the 2020 No Build Alternative in portions of the corridor. With the Managed Lanes project the 2020 LOS is expected to range between C and F on the main lanes and free flowing on the managed lanes (LOS A-D); thus, improving travel time in the corridor to 25-30 minutes.

The total ADT and peak hour volumes increase with the Managed Lanes project compared to the No Build traffic. Traffic which was originally constrained by lane capacity would begin utilizing the freeway.

The project is effective in moving people because it combines a transit project (MTDB's BRTS) and a highway project. It also allows for management of the traffic so that 50% of the people trips in the corridor can be made at high speeds during peak periods by year 2020. For example, the 2020 estimated people trips southbound during the AM peak hour on the Managed Lanes at Lake Hodges is as follows:

2020 SB Traffic in AM Peak @ Lake Hodges Bridge:

40 buses times 50 riders each	= 2,000 people trips on Managed Lanes
3350 carpools times 2.5 occupants/veh	= 8,375 " " " "
<u>1000 solo drivers (on Managed Lanes)</u>	<u>= 1,000 " " " "</u>
Total people trips on Managed Lanes=	11,375 " " " "

For comparison, the total 2020 SB Traffic estimated people trips during the AM peak hour on the general use lanes at Lake Hodges are:

10,800 vehicles times 1.05 occupants/vehicle = 11,340.

A directional split is the difference in traffic demand between the two directions of a freeway. A 60/40 split means that of the total demand for that facility during the peak period, 60 percent of the demand is in the peak direction and 40 percent is traveling in the reverse peak direction. A 50/50 split means that there is no peak direction, but that demand is the same in both directions.

Traffic demand should be viewed over the entire peak period and not just the peak hour. If the entire volume over the peak period is added, the directional split demand is 55 percent to 60 percent in the peak direction (southbound in the morning, northbound in the evening) and only 40 percent to 45 percent in the reverse peak.

Another way to look at the directional split demand is by peak period HOV volumes assigned by the Regional Transportation Model. The 2020 directional split in peak hour HOV volumes is forecasted to be 70 percent in the peak direction and 30 percent in the reverse peak.

A model was run to compare the 2020 forecast with a 2020 forecast assuming that smart growth strategies are being used. The results show that a 10% overall increase for the I-15 traffic volumes, however, the directional split remains strong at 55-60% in the peak direction.

With no continuous arterial routes parallel to I-15, even a minor incident that results in closure of the freeway lane(s) is a major impact to commuters and to businesses. Between the period of January 1, 1998 and December 31, 2000, there were 2,000 accidents reported on the main lanes and an additional 314 accidents on the on ramps and off ramps. Interstate 5 is parallel, but is very distant and is also congested during peak traffic hours. The lack of alternative routes is a concern that has been frequently expressed by a wide range of users and stakeholders.

